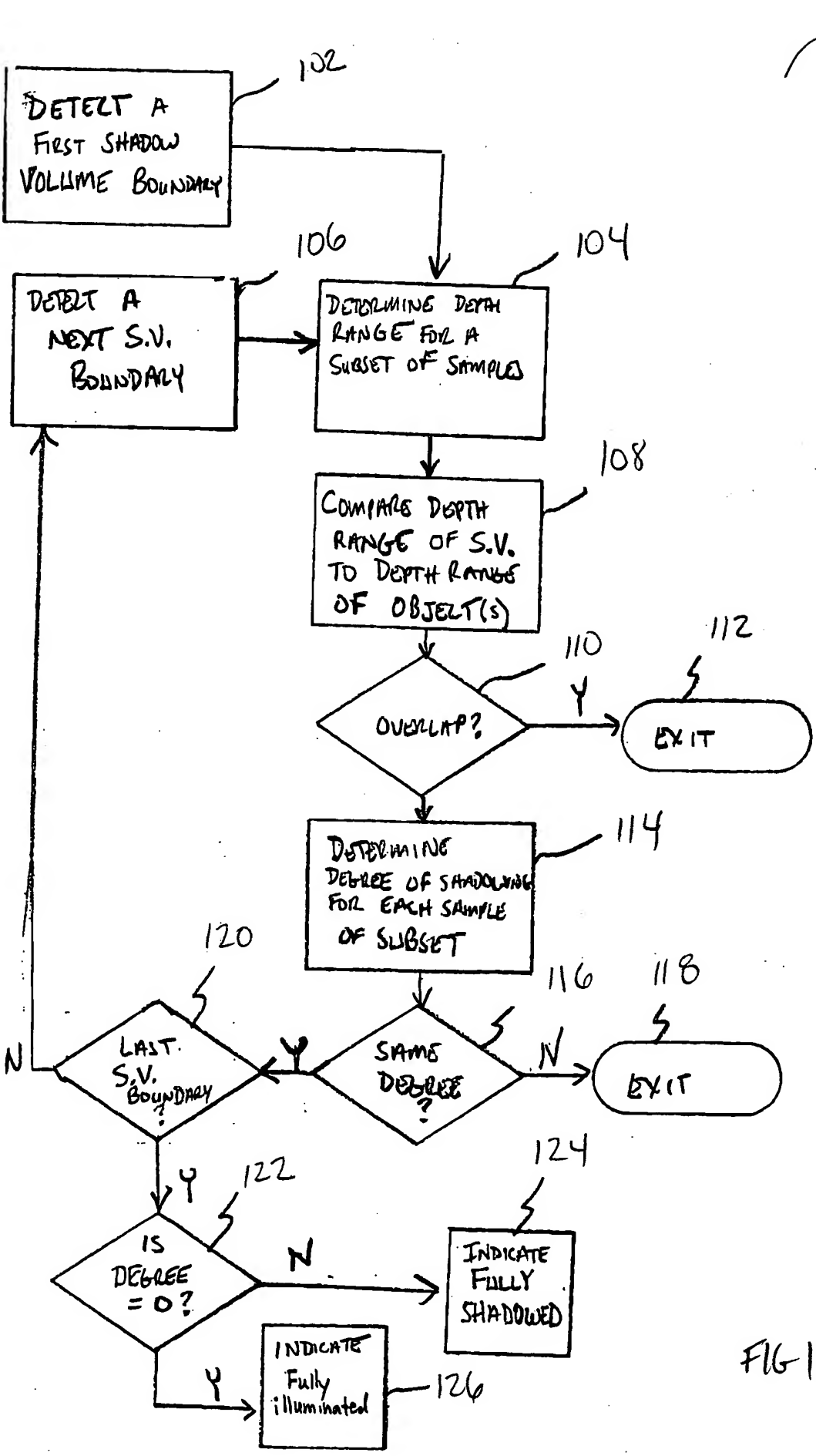
100
102
DETECT A FIRST SHADOW VOLUME BOUNDARY
106
DETECT A NEXT S.V. BOUNDARY
104
DETERMINE DEPTH RANGE FOR A SUBSET OF SAMPLES
108
COMPARE DEPTH RANGE OF S.V. TO DEPTH RANGE OF OBJECT(S)
110
OVERLAP?
Y
112
EXIT
114
DETERMINE DEGREE OF SHADOWING FOR EACH SAMPLE OF SUBSET
116
SAME DEGREE?
N
118
EXIT
Y
120
LAST S.V. BOUNDARY?
N
Y
122
IS DEGREE = 0?
N
124
INDICATE FULLY SHADOWED
Y
INDICATE Fully illuminated
126

FIG 1A

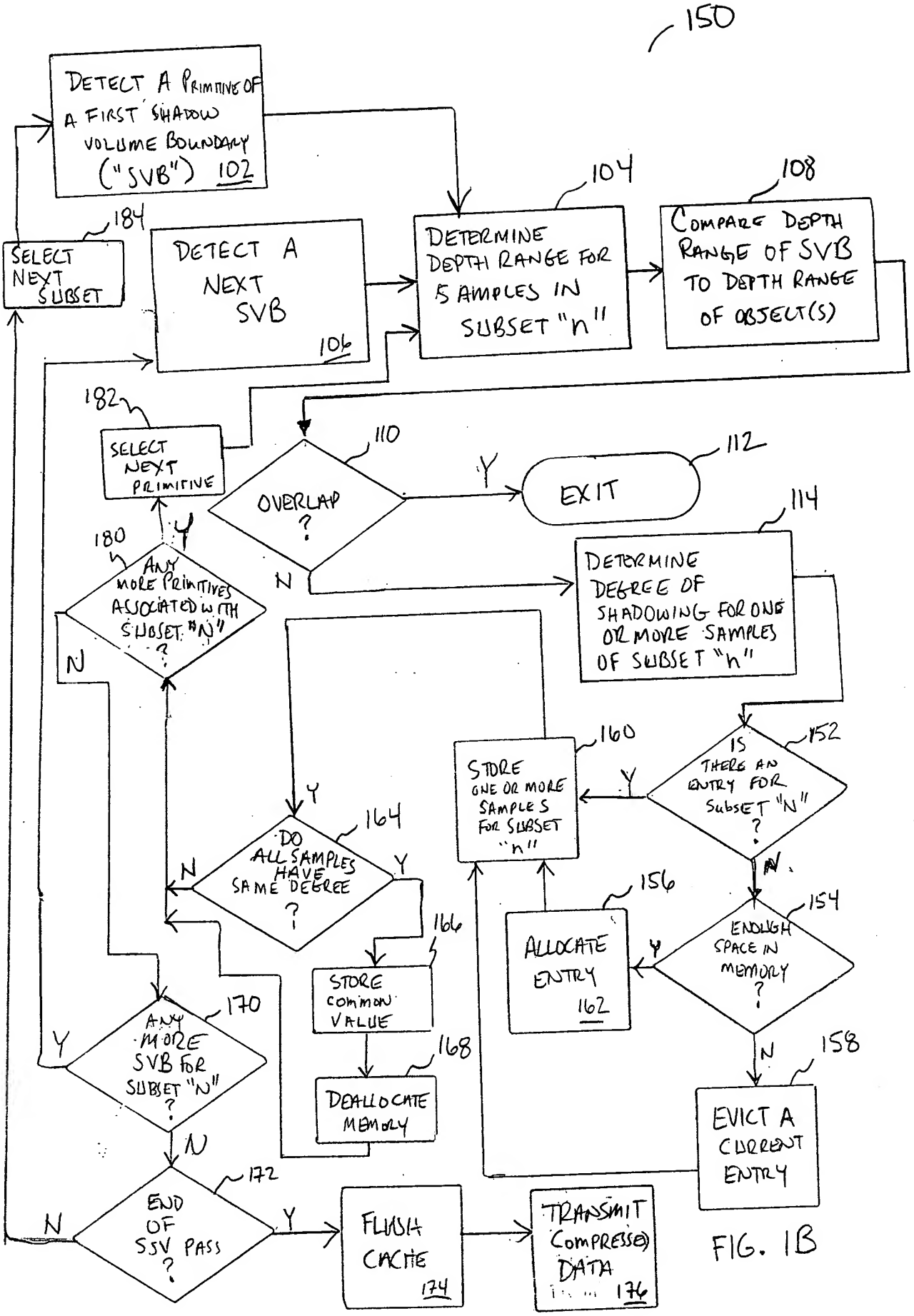
150
DETECT A PRIMITIVE OF A FIRST SHADOW VOLUME BOUNDARY ("SVB") 102
104
DETERMINE DEPTH RANGE FOR SAMPLES IN SUBSET "n"
108
COMPARE DEPTH RANGE OF SVB TO DEPTH RANGE OF OBJECT(S)
184
SELECT NEXT SUBSET
DETECT A NEXT SVB 106
182
SELECT NEXT PRIMITIVE
110
OVERLAP ?
Y
112
EXIT
N
114
DETERMINE DEGREE OF SHADOWING FOR ONE OR MORE SAMPLES OF SUBSET "n"
180
ANY MORE PRIMITIVES ASSOCIATED WITH SUBSET "N" ?
Y
N
160
STORE ONE OR MORE SAMPLES FOR SUBSET "n"
152
IS THERE AN ENTRY FOR SUBSET "N" ?
Y
N
164
DO ALL SAMPLES HAVE SAME DEGREE ?
Y
N
156
ALLOCATE ENTRY 162
154
ENOUGH SPACE IN MEMORY ?
Y
N
166
STORE COMMON VALUE
168
DEALLOCATE MEMORY
158
EVICT A CURRENT ENTRY
170
ANY MORE SVB FOR SUBSET "N" ?
Y
N
172
END OF SSV PASS ?
N
Y
FLUSH CACHE 174
TRANSMIT COMPRESSED DATA 176

FIG. 1B

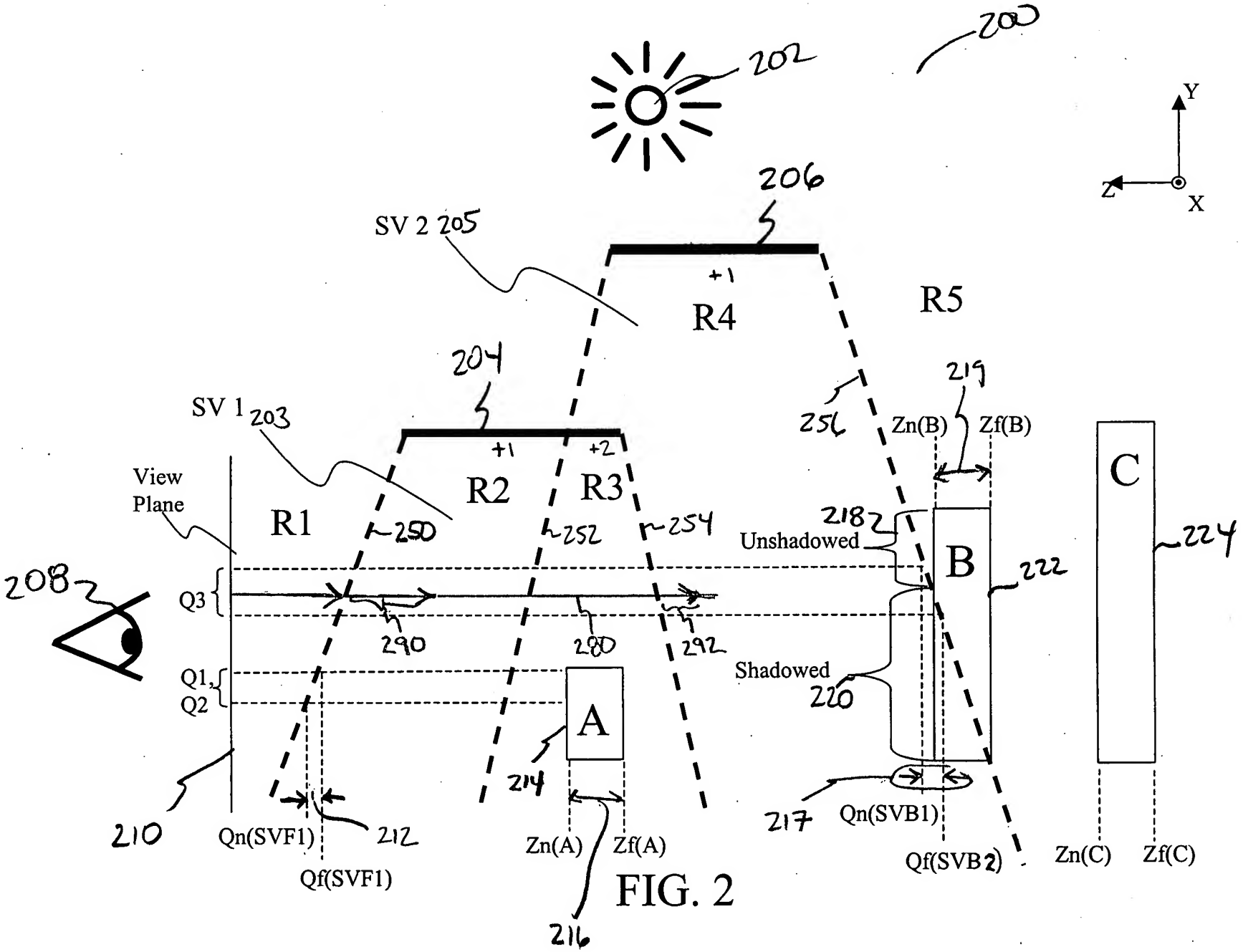
200
202
206
SV 2 205
+1
R4
R5
204
SV 1 203
+1
+2
R2
R3
R1
View Plane
250
252
254
208
Q3
290
280
292
Q1,
Q2
A
214
210
Qn(SVF1)
212
Qf(SVF1)
Zn(A)
Zf(A)
216
256
219
Zn(B)
Zf(B)
218
Unshadowed
B
222
C
224
Shadowed
220
217
Qn(SVB1)
Qf(SVB2)
Zn(C)
Zf(C)
Y
Z
X

FIG. 2

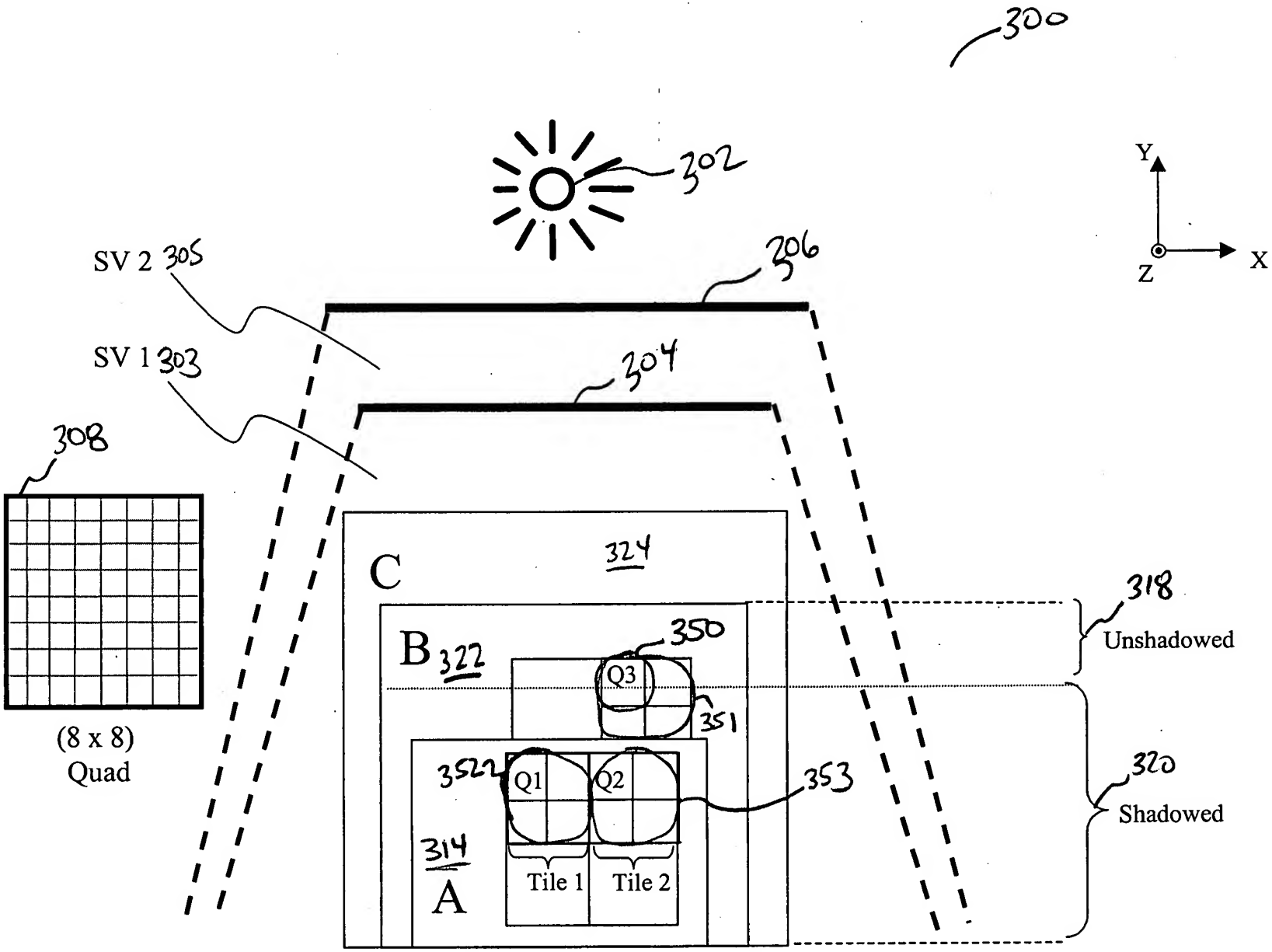
300
302
Y
X
Z
SV 2 305
306
SV 1 303
304
308
(8 x 8)
Quad
C
324
318
Unshadowed
B 322
350
Q3
351
352
Q1
Q2
353
320
Shadowed
314
A
Tile 1
Tile 2

FIG. 3

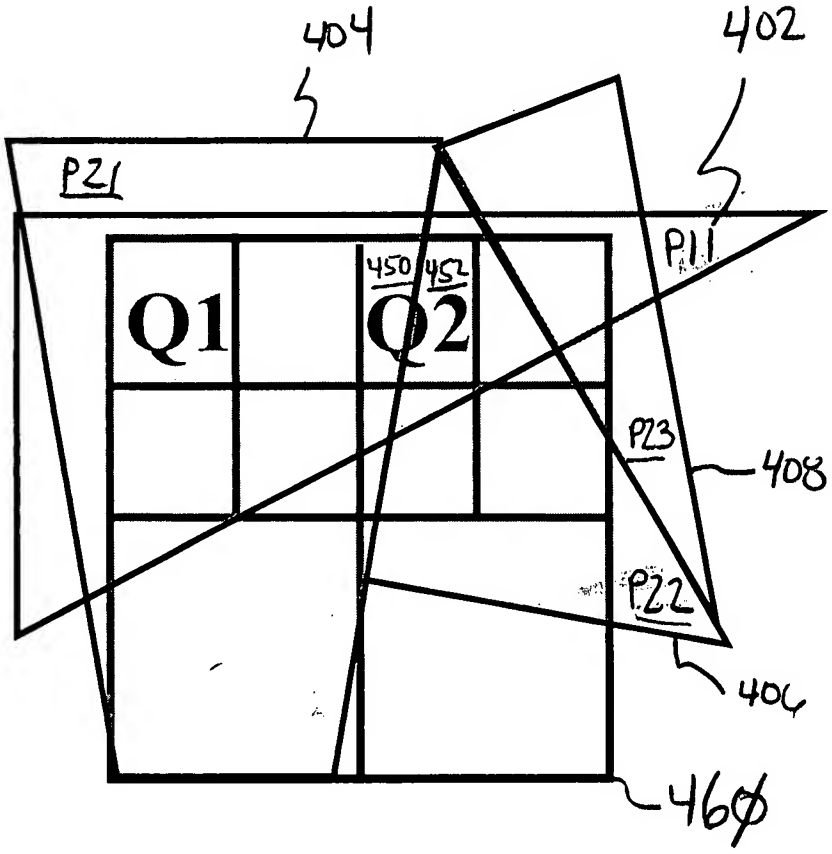
404
402
P21
P11
450
452
Q1
Q2
P23
408
P22
406
460

FIG. 4A

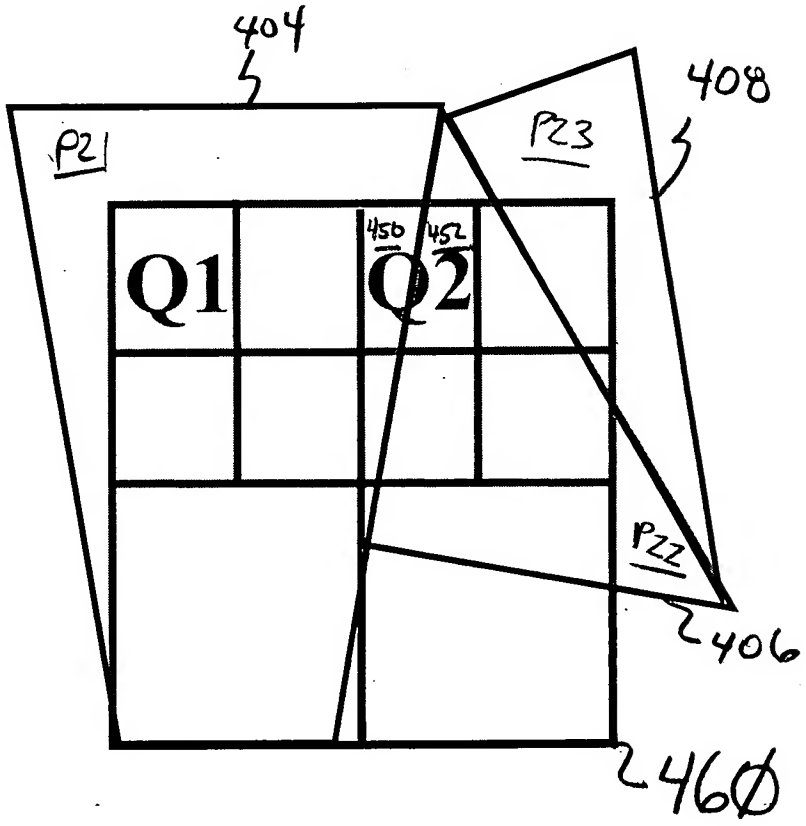
404
408
P21
P23
450
452
Q1
Q2
P22
406
460

FIG. 4B

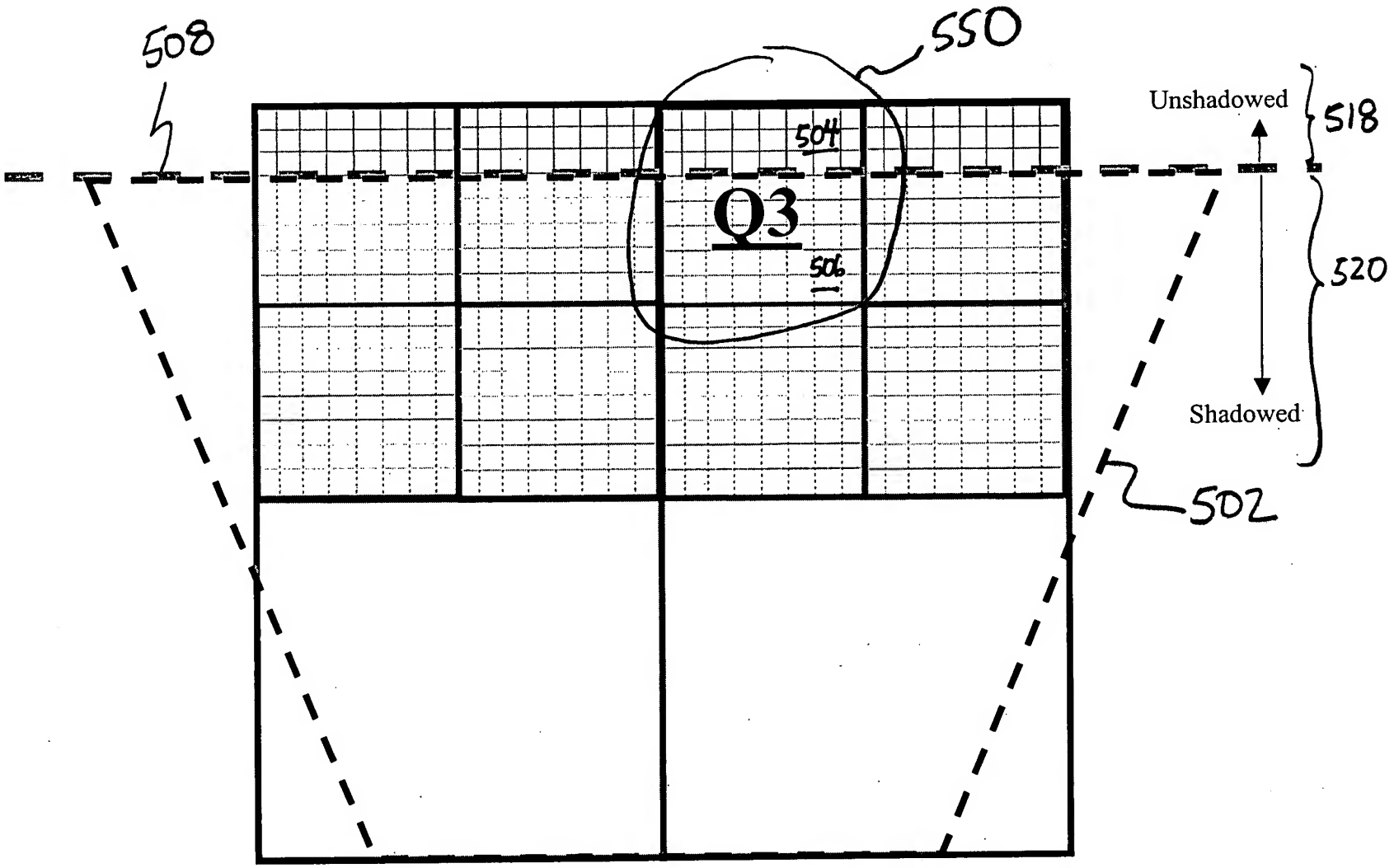

FIG. 5

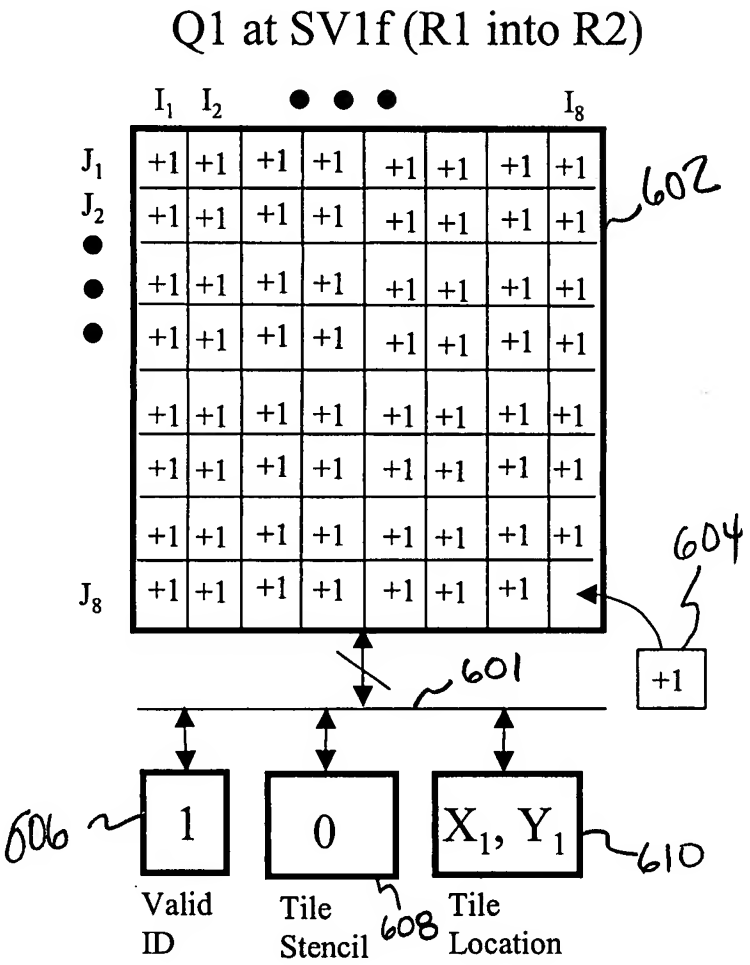
Q1 at SV1f (R1 into R2)
I1 I2 ● ● ● I8
J1
J2
J8
+1
602
604
601
606
1
0
X1, Y1
610
608
Valid ID
Tile Stencil
Tile Location

FIG. 6A

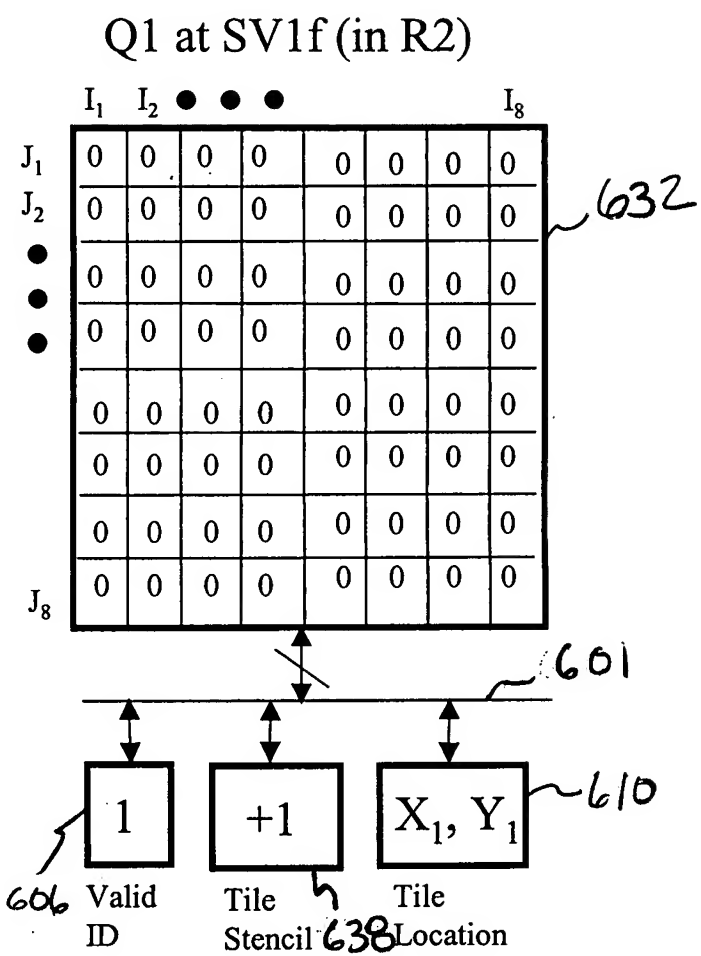
Q1 at SV1f (in R2)
I1 I2 ● ● ● I8
J1
J2
J8
0
632
601
606
1
+1
X1, Y1
610
638
Valid ID
Tile Stencil
Tile Location

FIG. 6B

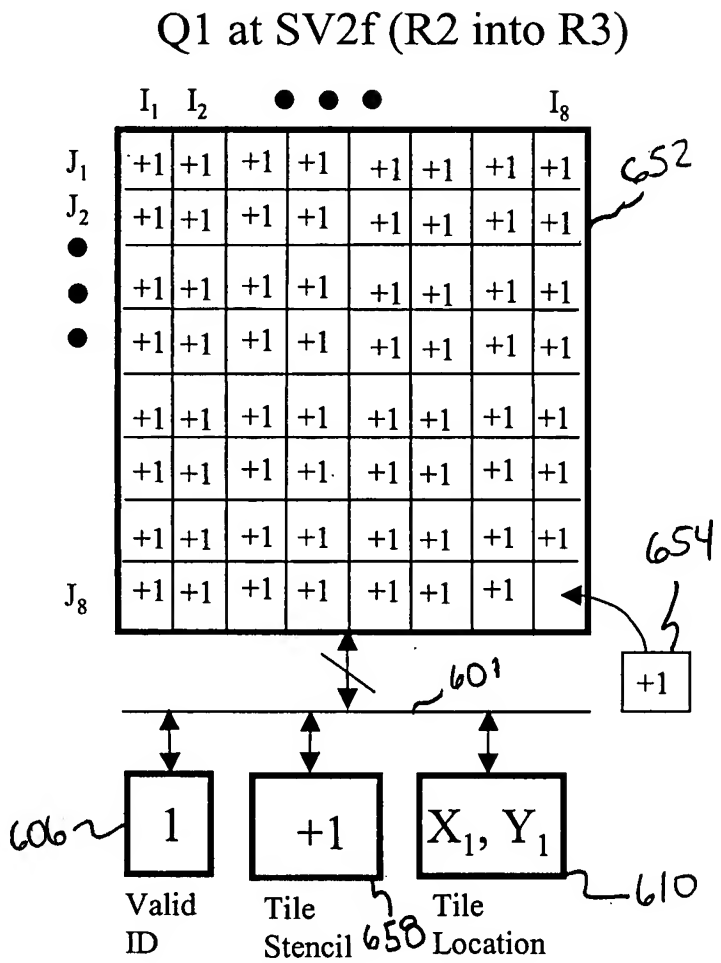
Q1 at SV2f (R2 into R3)
I1 I2 ● ● ● I8
J1
J2
J8
652
654
+1
601
606
1
+1
X1, Y1
610
658
Valid ID
Tile Stencil
Tile Location

FIG. 6C

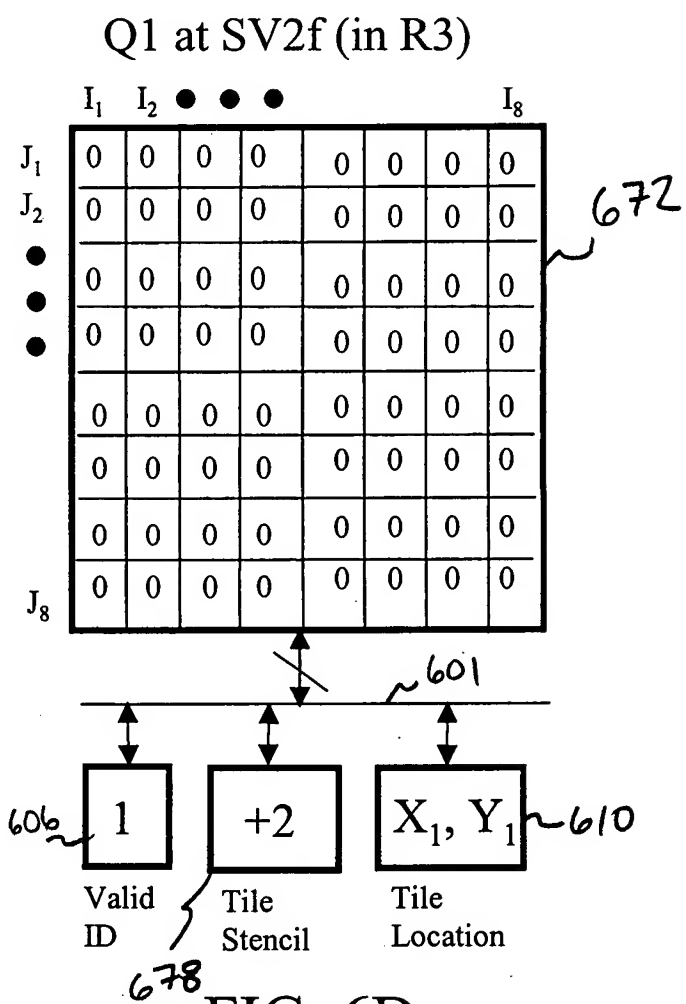
Q1 at SV2f (in R3)
I1 I2 ● ● ● I8
J1
J2
J8
672
601
606
1
+2
X1, Y1
610
678
Valid ID
Tile Stencil
Tile Location

FIG. 6D

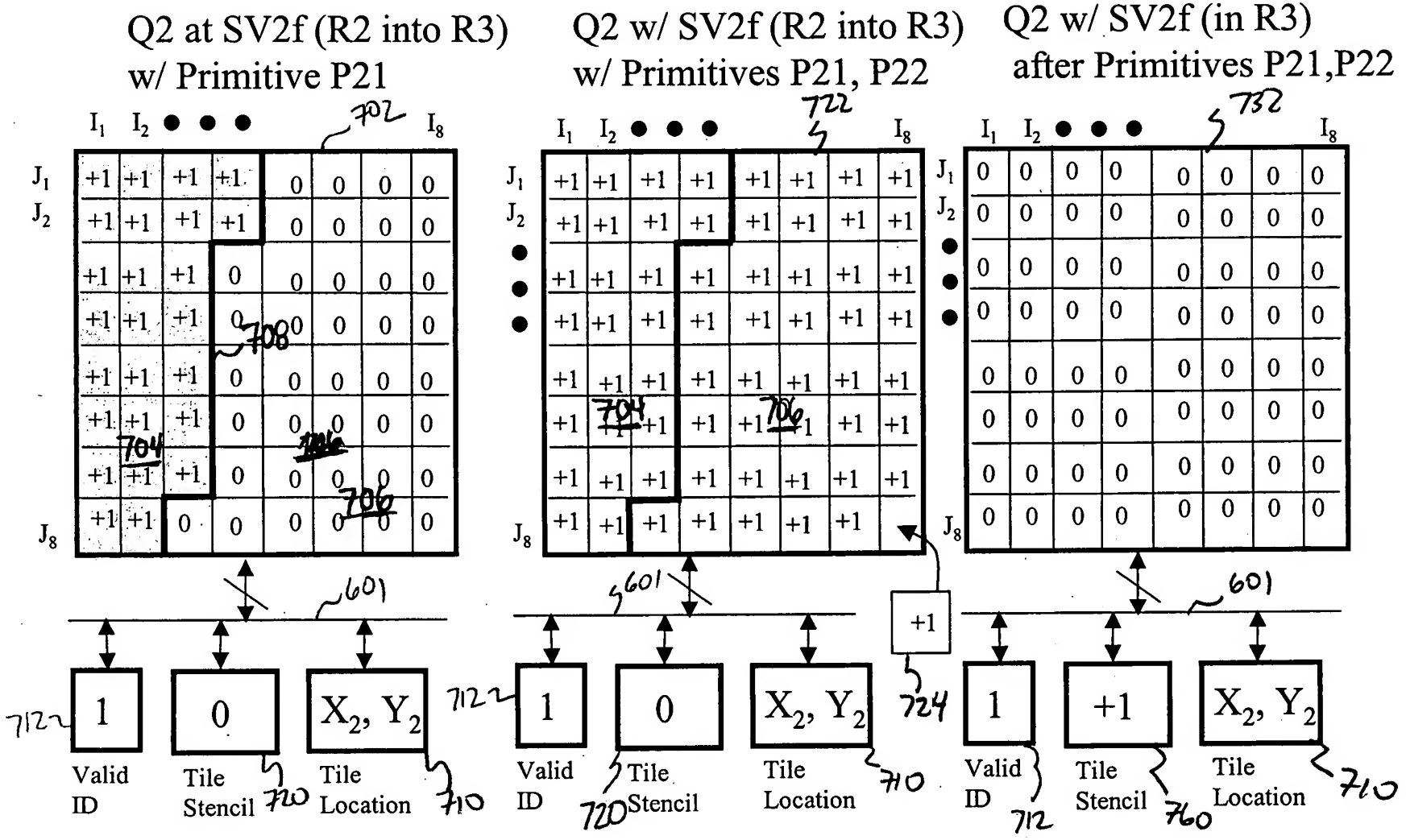

FIG. 7A

FIG. 7B

FIG. 7C

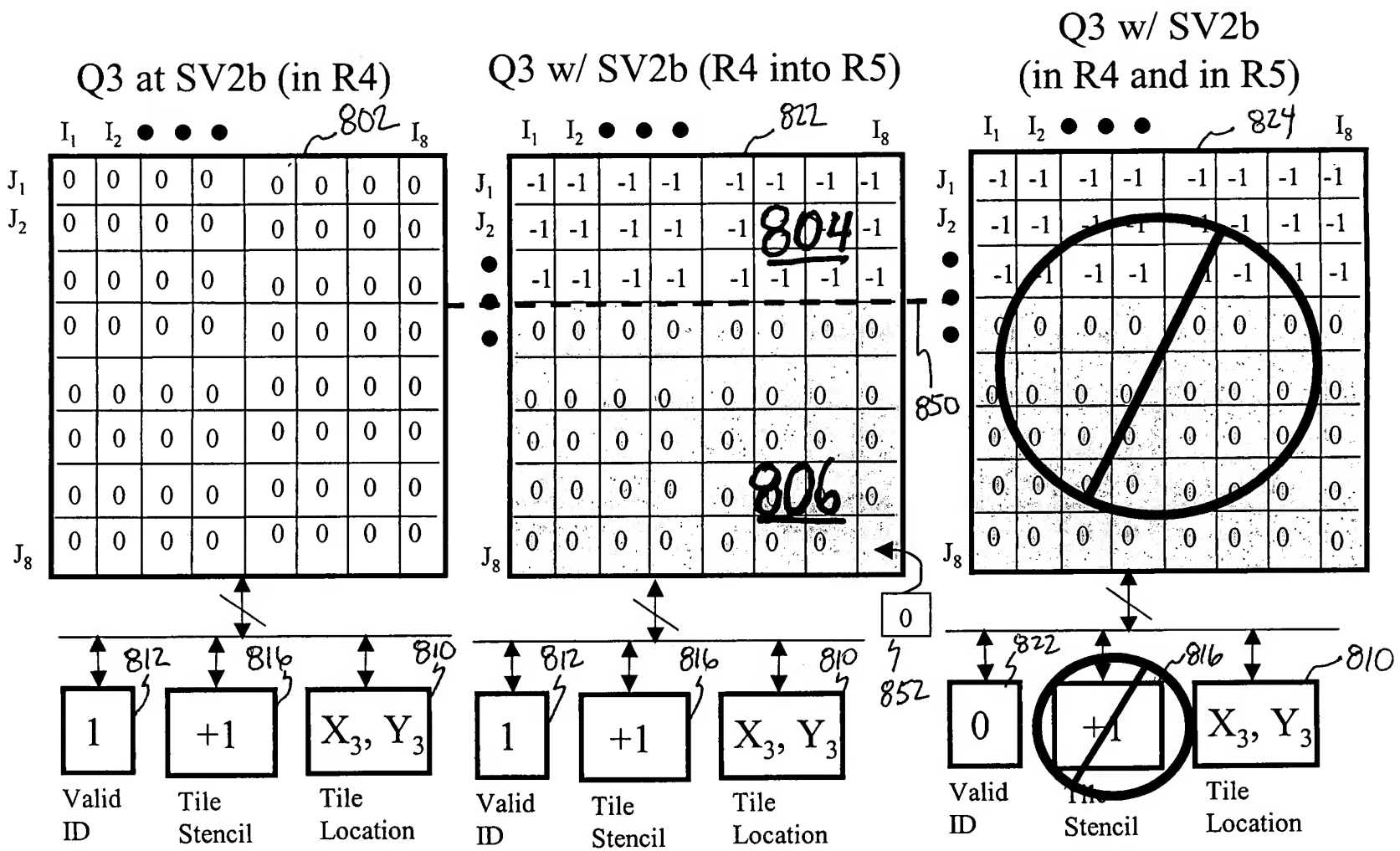

FIG. 8A FIG. 8B FIG. 8C

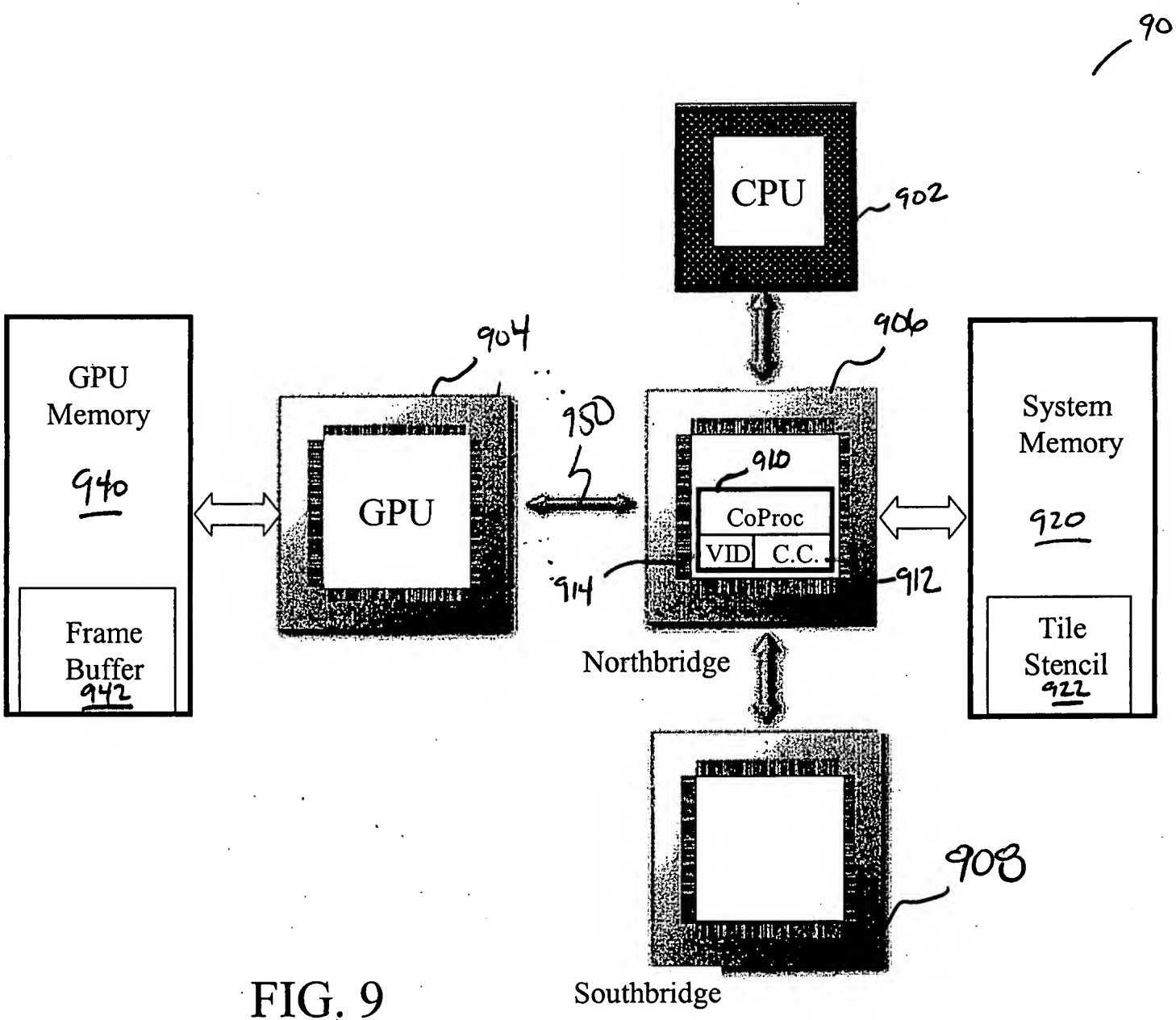
900
CPU
902
GPU Memory
940
Frame Buffer
942
904
GPU
950
906
910
CoProc
VID
C.C.
914
912
Northbridge
System Memory
920
Tile Stencil
922
908
Southbridge

FIG. 9